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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/002,633	12/05/2001	Rainer Hocker	033275-015	4154

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EXAMINER

LEO, LEONARD R

ART UNIT	PAPER NUMBER
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3743

DATE MAILED: 02/25/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

# Office Action Summary

Application No.

10/002,633

Applicant(s)

HOCKER ET AL.

Examiner

Leonard R. Leo

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☒ Responsive to communication(s) filed on 12 December 2002.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 1,2,5 and 6 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1,2,5 and 6 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

## Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

## Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other:

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### DETAILED ACTION

The amendment filed December 12, 2002 has been entered. Claims 1-2 and 5-6 are pending.

#### *Specification*

The disclosure is objected to because of the following informalities:

Referencing a claim in the specification is improper.

Appropriate correction is required.

#### *Claim Rejections - 35 USC § 102*

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1 and 5-6 are rejected under 35 U.S.C. 102(b) as being clearly anticipated by Cermak.

#### *Claim Rejections - 35 USC § 103*

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-2 and 5-6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Cermak in view of Ashiwake et al.

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Cermak discloses all the claimed limitations except the troughs having a spherical cup form.

Ashiwake et al discloses a heat exchanger comprising a plurality of impingement orifices in carrier 16; and wall parts 8 having a remote planar side and spherical cup impingement side (Figure 8) for the purpose of improving heat transfer.

Since Cermak and Ashiwake et al are both from the same field of endeavor and/or analogous art, i.e. impingement cooling, the purpose disclosed by Ashiwake et al would have been recognized in the pertinent art of Cermak.

It would have been obvious at the time the invention was made to a person having ordinary skill in the art to employ in Cermak troughs having a spherical cup form for the purpose of improving heat transfer as recognized by Ashiwake et al.

Claims 1-2 and 5-6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Livingood et al in view of Wettstein (US).

Livingood et al discloses cooling a turbine vane or blade by impingement to a concave hemispherical surface, but does not disclose a plurality of impingement jets opposed to a wall part.

Wettstein discloses a turbine blade (Figure 6) comprising a wall part 10 having an impingement facing side and opposed planar side, and carrier 13 having a plurality of impingement orifices defined by tubes 11 for the purpose of achieving a desired heat exchange.

Since Livingood et al and Wettstein are both from the same field of endeavor and/or analogous art, the purpose disclosed by Wettstein would have been recognized in the pertinent art of Livingood et al.

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It would have been obvious at the time the invention was made to a person having ordinary skill in the art to employ in Livingood et al a plurality of impingement orifices defined by tubes for the purpose of achieving a desired heat exchange as recognized by Wettstein. Further, the modification is deemed to be nothing more than a mere duplication of parts, where it has been held that mere duplication of the essential working parts of a device involves only routine skill in the art. *In re Harza*, 274F.2d 669, 124 USPQ 378 (CCPA 1960).

### ***Response to Arguments***

The rejection under 35 U.S.C. 112, second paragraph is withdrawn.

Regarding applicants' remarks with respect to Cermak, the troughs 7 are read as "similar rotationally symmetrical forms." Although, the troughs of Cermak are to be avoided as disclosed by applicants, the claim recitation of "similar rotationally symmetrical forms" reads on the structure of Cermak.

Regarding applicants' remarks with respect to the combination of Cermak and Ashiwake et al, the instant invention as claimed merely recites an "impingement flow device." In response to applicant's argument that Ashiwake et al is nonanalogous art, it has been held that a prior art reference must either be in the field of applicant's endeavor or, if not, then be reasonably pertinent to the particular problem with which the applicant was concerned, in order to be relied upon as a basis for rejection of the claimed invention. See *In re Oetiker*, 977 F.2d 1443, 24 USPQ2d 1443 (Fed. Cir. 1992). In this case, both Cermak and Ashiwake et al are concerned with impingement cooling of a "wall part" via an orificed carrier. The environments of Cermak and Ashiwake et al may be different. However, they share the same simple fundamental theory of impingement cooling.

In response to applicants' remarks with respect to the combination of Livingood et al and Wettstein, the test for obviousness is not whether the features of a secondary reference may be bodily incorporated into the structure of the primary reference; nor is it that the claimed invention must be expressly suggested in any one or all of the references. Rather, the test is what the combined teachings of the references would have suggested to those of ordinary skill in the art. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981). In this respect, applicants believe the combination of Livingood et al and Wettstein would destroy the disclosure of Wettstein, in that, Wettstein discloses the air jets are opposed to humps as in Figure 3. This reasoning is flawed, because the primary reference of Livingood et al would be destroyed, where one air jet is opposed to only one hemispherical cup.

Throughout the prosecution of this application, applicants have repeatedly argued that Livingood et al cannot be used as prior art, since the document is only experimental and only discloses a single air jet opposed to a single hemispherical surface. To this extent, the Examiner disagrees. Any published document that a skilled artisan deems particularly pertinent *is* prior art. As previously stated, Livingood et al discloses a single impingement jet opposed to a single concave hemispherical surface, and discloses that "An effective method of cooling the leading-edge region of turbine vanes and blades is by impingement of cool air in the internal surface." Thus, one of ordinary skill in the art would be fully versed in impingement cooling and turbine blade design.

The secondary reference of Wettstein discloses impingement cooling a turbine blade and teaches one of ordinary skill in the art to employ a plurality of impingement jets opposed to a wall in a turbine blade for the purpose of achieving a desired heat exchange. Clearly, Livingood

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et al and Wettstein are both related to impingement cooling of turbine blades. Wettstein merely reinforces the case law of *In re Harza*, which applicants do not dispute. Applicants have failed to recognize the level of skill in the art of turbine vane or blade cooling and appear to downplay this ordinary skill. One of ordinary skill in the art of turbine vane or blade cooling would employ plural impingement jets opposed to corresponding spherical concavities to achieve a desired heat exchange.

In conclusion, applicants argue that Livingood et al is only concerned with only one air jet and only one hemispherical cup in the impingement cooling of internal turbine vanes or blades. The secondary reference of Wettstein et al is merely employed to teach that not only one air jet and only one opposed cup are employed in reality, rather plural air jets are employed. Without the destruction of Livingood et al, the one to one correspondence of air jet to hemispherical cup must be preserved.

### *Conclusion*

**THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event,

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however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry of a general nature, relating to the status of this application or clerical nature (i.e. missing or incomplete references, missing or incomplete Office actions or forms) should be directed to the Technology Center 3700 Customer Service whose telephone number is (703) 306-5648.

Any inquiry concerning this Office action should be directed to Leonard R. Leo whose telephone number is (703) 308-2611.



LEONARD R. LEO  
PRIMARY EXAMINER  
ART UNIT 3743

February 22, 2003